RV Langseth
Data Reduction Summary

MGL0909

Kaohsiung, Taiwan – Astoria, Oregon

PRELIMINARY

v0.1, 2009-08-01

Lamont-Doherty Earth Observatory, Columbia University

Mon Aug 17 18:00:00 2009

Date	Julian Date	Time	Port
2009-07-27	2009-208	0200 UTC, 1000L	Kaohsiung, Taiwan
2009-08-17	2009-229	1930 UTC, 1130L	Astoria, Oregon

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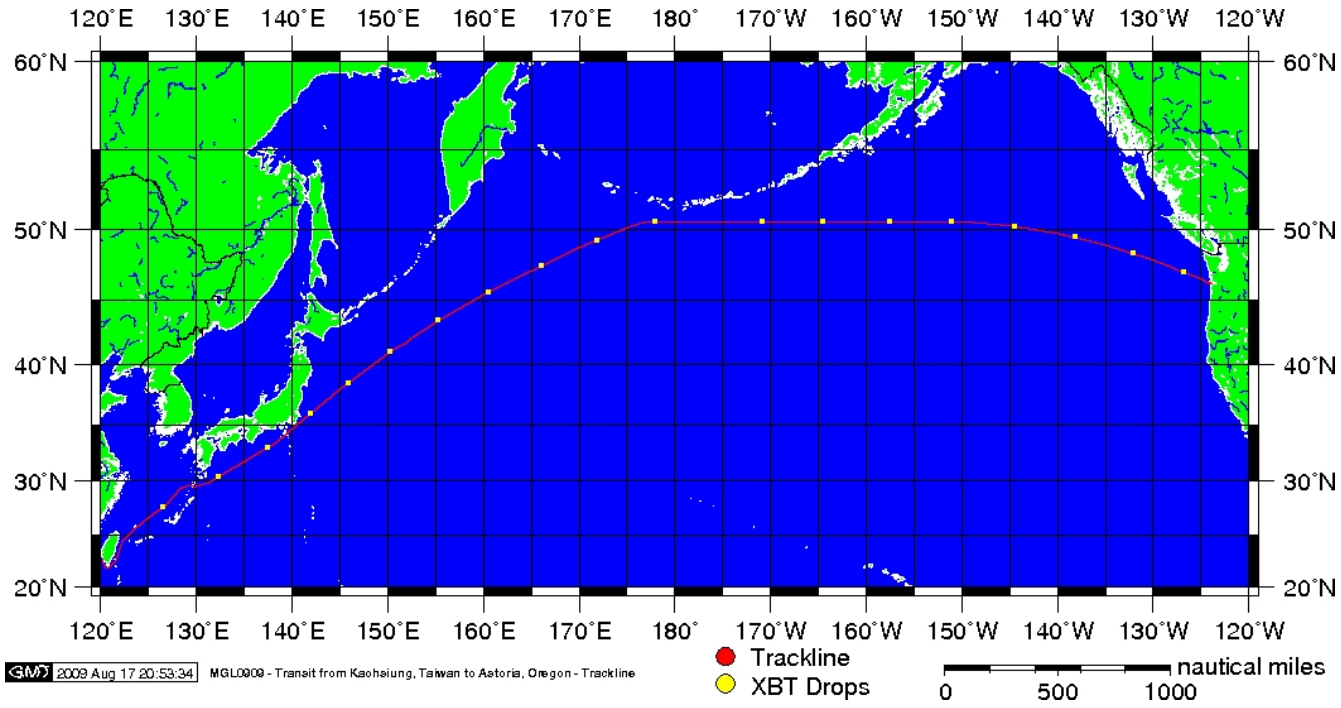
Please refer to the Langseth Data Report Supplement for information regarding data formats.

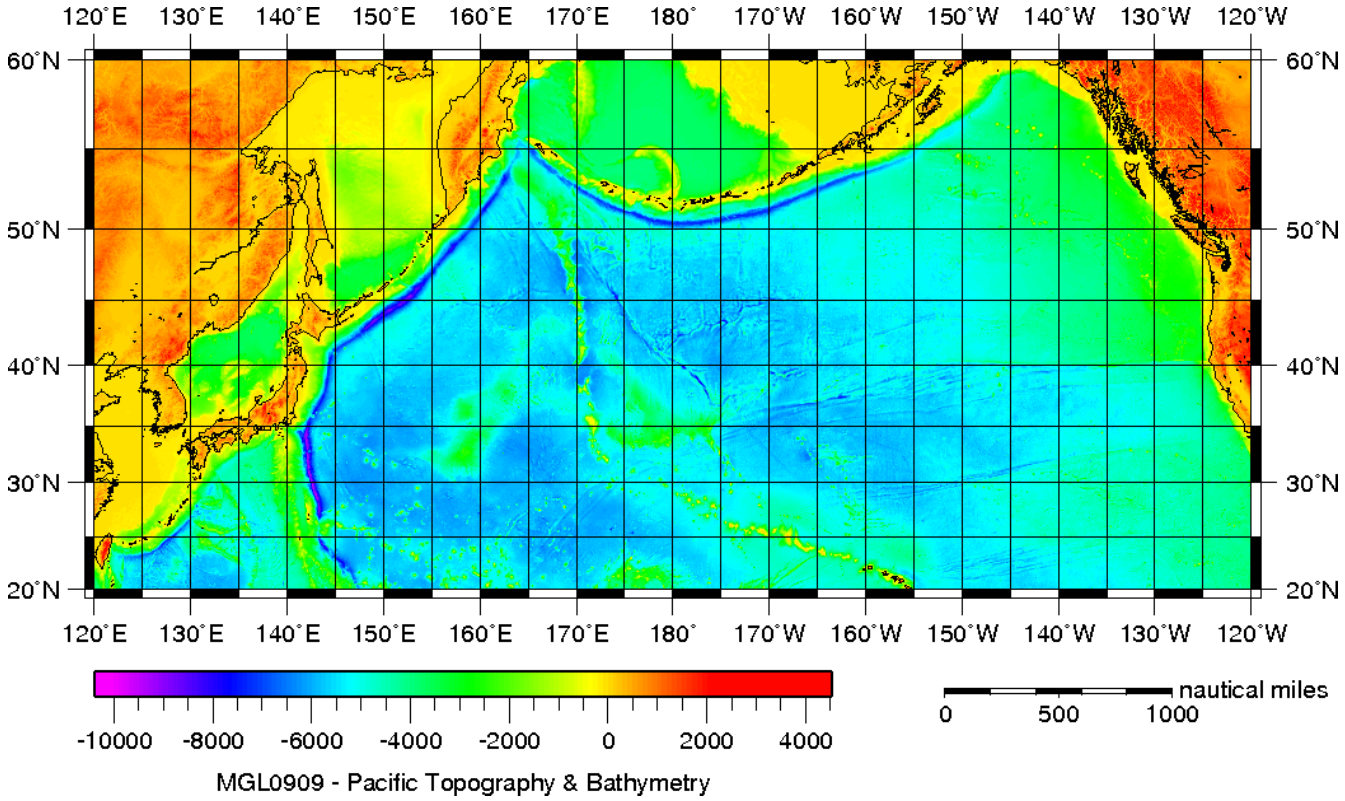
Cruise Track



I. Background and Scientific Objectives

Transit from Kaohsiung, Taiwan to Astoria, Oregon.

Figure 1a – Pacific Ocean Topography & Bathymetry



II. Personnel

Shipboard Technical Staff

1	Ted Koczynski	Technician-in-charge
2	David Ng	Nav/IT

Ship's Crew

1	James O'Loughlin	Captain
2	Stanley Zeigler	Chief Mate
3	David Wolford	2nd Mate
4	Nicholas Gasper	3rd Mate
5	Jason Woronowicz	Bosun
6	George Cereno	AB
7	Ricardo Redito	AB
8	Ethan Bell	AB
9	Ben Nadler	OS
10	Jeromial Webster	OS
11	Nicky Applewhite	OS
12	Albert Karlyn	Chief Engineer
13	Peter Chizmar	1st Asst. Engineer
14	Michael Caseria	2nd Asst. Engineer
15	Ryan Vetting	3rd Asst. Engineer
16	Jack Schwartz	Electrician
17	Fernando Uribe	Oiler
18	Stephen Collier	Oiler
19	Charles Billips	Oiler
20	Gary Brodock	Steward
21	Ricardo Rios	Cook

III. Instrumentation Summary

All science instruments aboard the Langseth are listed in the science_sensors spreadsheet in the docs section of the cruise archive. Summary notes on operation during this cruise are listed below. Seismic equipment is not listed here, refer to Part IV for the seismic summary. Other instruments not listed were not in operation.

For details on the data formats and interpretation notes, see Appendix A, Data Formats, included on the cruise archive.

Instrument Data Files

Instrument	Description	Data Set	Data Outputs	Files	Interval
FE700	Furuno FE700 Echosounder	Partial	serial logs	MGL-bath01.*	1s
EM120	Kongsberg EM120 Multibeam Sonar	Partial	raw output to file	See below	variable
			centerbeam serial logs	MGL-bath02.*	variable
DS50	Furuno DS50 Doppler Speedlog	Full	serial logs	MGL-slog01.*	1s
XBT	Sippican MK21 XBT Launcher		raw output to file	See below	n/a
			converted output to file	See below	
WX1	RM Young 5103 Weather Bird and Translator	Full	serial logs	MGL-wx01.*	1s
			mwv conversion	MGL-mwv01.*	
TSG	SeaBird SBE23 Thermosalinograph	Partial	raw serial logs	MGL-tsg.*	1s
			converted data	MGL-tsgconv.*	
CNAV	C&C Tech. CNAV DGPS Receiver	Full	serial logs	MGL-cnav.*	1s
MAG01	GeoMetrics 882 Magnetometer	None	serial logs	MGL-mag01.*	1s
BGM	Bell Aerospace BGM-3 Gravimeter	Partial	serial logs	MGL-vc01.*	1s
GYRO	Simrad GC80 Gyrocompass/AD100	Full	serial logs	MGL-gy01.*	1s
POSMV	Applanix POSMV Integrated Nav System	Full	serial logs	MGL-posmv.*	1s
SEAPATH	Konsberg SeaPath Integrated Nav System	Full	serial logs	MGL-seapath.*	1s
STU	Sercel Streamer Tension	None	serial logs	MGL-stu1.*	10s
TAGGER	Spectrum Instruments intelligent reference TM-4	Full	serial logs	MGL-tagger01.*	shot
			filtered logs	MGL-shot01.*	shot

All timestamps in this report are presented using UTC time and day of year in order to avoid confusion with local time changes.

Science Navigation Instrumentation

FE700

Logging interval: 1 second

File id: bath01

The FE700 only operated to 800m depth. The echosounder is normally switched off before the unit goes out of depth. The unit was not logged during this cruise.

Interruptions greater than twenty seconds are displayed in the following table.

Log Date	Event	Comment
2009:208:00:00:00.3669		Logging officially
2009:229:20:18:19.0812		Logging officially

bath01 data sample:

```
bath01      2008:220:13:45:42.0681  $SDDBT,,,,,,
bath01      2008:220:13:45:42.0690  $SDDBS,,,,,,
bath01      2008:220:13:45:42.0691  $SDDPT,,0006.6*49
bath01      2008:220:13:45:42.1482  $PFEC,Alarm,0,0*6F
bath01      2008:220:13:45:42.1483  $PFEC,xdr,FORE,050*79
```

EM-122 Mutibeam

The EM122 multibeam sonar was operated throughout the cruise. The system is designed for deeper water, and does not track ground well in less than 50m of water.

EM122 swath data is saved to the cruise archive under MGL0903/multibeam. Center beam depth is recorded separately to serial log. MicroSV sound velocity was used up through Feb 28. TSG sound velocity was used beginning 0900 on Feb 28.

Logging interval: variable with water depth

File id: bath02

Interruptions greater than sixty seconds are displayed in the following table.

Log Date	Event	Comment
2009:208:05:59:13.4016		Logging officially
2009:221:02:07:07.5190 – 2009:221:02:12:31.4653	Missing data	Restarted SIS due blotches in data
2009:229:19:25:17.3576		Logging officially

Bath02 data format

```
bath02      2008:192:00:00:12.6663  $KGDPT,2938.25,0.0,12000.0*4a
bath02      2008:192:00:00:30.3301  $KGDPT,2954.08,0.0,12000.0*4f
bath02      2008:192:00:00:46.5831  $KGDPT,2958.32,0.0,12000.0*4a
bath02      2008:192:00:01:03.0606  $KGDPT,2954.18,0.0,12000.0*4e
```

DS50 Speedlog

File id: slog01
Logging interval: 1 second

The Furuno DS-50 is a Doppler speed log. It was in operation for the length of the cruise.

Interruptions greater than ten seconds are displayed in the following table.

Log Date	Event	Comment
2009:208:00:00:00.4775		Logging officially
2009:229:20:18:39.0550		Logging officially

Slog01 data format:

```
slog01      2008:231:00:00:00.0744  $VDVHW,,T,,M,09.68,N,17.93,K*4C
slog01      2008:231:00:00:00.1906  $VDVBW,009.68,000.09,A,009.68,000.09,V*46
slog01      2008:231:00:00:00.1908  $VDVLW,0005960.30,N,0005960.30,N*5F
```

RMYoung Integrated Weather

File id: wx01
Logging interval: 1 second

The weather station is used to log wind speed, direction, air temperature, and barometric pressure. The unit was functioning during the cruise. See also mwv01 below.

Log Date	Event	Comment
2009:208:00:00:00.9221		Logging officially
2009:229:20:18:51.9595		Logging officially

File id: mwv01
Logging interval: 1 second

The weather station is used to log wind speed, direction, air temperature, and barometric pressure. The wx01 strings are converted in real-time to produce mwv strings for the DP. The mwv output is strictly a derivative of the w01 output. See also the wx01 description above.

Interruptions greater than ten seconds are displayed in the following table.

Log Date	Event	Comment
2009:208:00:00:00.9221		Logging officially

2009:229:20:18:26.9582		Logging officially

Mwv01 data sample:

```
mwv01 2008:231:00:00:00.5173  6.1   6.6   6.6   8.8 354 321   5   0.0   0.0   0.0
0.0 355 355   0 ***** ***** ***** *****  8  8  8 1009.7
mwv01 2008:231:00:00:01.5172  5.9   6.6   6.6   8.8 353 321   5   0.0   0.0   0.0
0.0 355 355   0 ***** ***** ***** *****  8  8  8 1009.6
mwv01 2008:231:00:00:02.5190  6.3   6.6   6.6   8.8 354 321   5   0.0   0.0   0.0
0.0 355 355   0 ***** ***** ***** *****  8  8  8 1009.8
```

CNAV
Logging interval: 1 second

File id: cnav

The C-NAV is a global satellite-based differential receiver. This is the best individual receiver currently on the ship. This system was operational during the cruise.

Interruptions greater than ten seconds are displayed in the following table.

Log Date	Event	Comment
2009:208:00:00:00.0172		Logging officially
2009:229:12:34:01.6242		Logging officially

Cnav data format:

```
cnav  2008:231:00:00:00.6936
$GPGGA,000000.00,1434.94372,N,10444.85748,W,2,8,1.1,15.52,M,-20.60,M,9,0108*65
cnav  2008:231:00:00:00.7137  $GPVTG,006.5,T,,M,9.64,N,17.85,K*53
```

GC80 Gyrocompass

The GC80 gyrocompass is installed on the bridge and used for ship and seismic navigation.

File id: gy01
Logging interval: 1 second

The GC80 gyrocompass operated normally.

Interruptions greater than ten seconds are displayed in the following table.

Log Date	Event	Comment
2009:208:00:00:00.0804		Logging officially
2009:229:20:18:25.3440		Logging officially

Gy01 data format:

```
gy01  2008:231:00:00:00.4110  $PTKM,HEALM,0000,0,G1*09
gy01  2008:231:00:00:00.6395  $HEHDT,005.8,T*22
gy01  2008:231:00:00:00.6396  $HEROT,-005.25,A*34
gy01  2008:231:00:00:01.6394  $HEHDT,005.7,T*2D
gy01  2008:231:00:00:01.6395  $HEROT,-004.53,A*34
```

POSMV Integrated Nav

The POS/MV is a receiver that uses CNAV input in addition to its own antennae, an inertial sensor and optional RTG, WTC, or WAAS corrections and a Kalman filter to produce a smooth navigation output and very accurate heading.

The PosMV operated normally during the cruise.

File id: posmv
Logging interval: 1 second

Interruptions greater than ten seconds are displayed in the following table.

Log Date	Event	Comment
2009:208:00:00:00.1815		Logging officially
2009:229:20:18:29.0853		Logging officially

Posmv data format:

```
posmv 2008:231:00:00:00.0885
      $INGGA,235959.842,1434.95002,N,10444.85734,W,2,,1.1,12.71,M,,,9.0,0108*2E
posmv 2008:231:00:00:00.0889  $INHDT,15.0,T*11
posmv 2008:231:00:00:00.2047  $INVTG,7.0,T,,M,9.7,N,17.9,K*46
posmv 2008:231:00:00:00.3208  $INGST,235959.842,,0.9,0.9,0.0,0.9,0.9,2.5*51
posmv 2008:231:00:00:00.4411  $PASHR,235959.842,15.05,T,-
0.58,0.48,0.15,0.069,0.069,0.045,2,0*05
posmv 2008:231:00:00:00.4412  $INZDA,235959.0000,17,08,2008,,*73
```

SeaPath Integrated Nav

The Kongsberg Seapath is an integrated navigation system. It was in operation for the length of the cruise.

Logging interval: 1 second

File id: seapath

Interruptions greater than ten seconds are displayed in the following table.

Log Date	Event	Comment
2009:208:00:00:00.4642		Logging officially

2009:229:03:57:41.6799		Logging officially

Seapath data format:

```
seapath     2008:231:00:00:00.0504  $INZDA,235959.99,17,08,2008,,*73
seapath     2008:231:00:00:00.1686
      $INGGA,235959.99,1434.953109,N,10444.859147,W,2,08,1.1,-
16.30,M,,M,1.0,0291*70
seapath     2008:231:00:00:00.1687  $INVTG,5.97,T,,M,9.7,N,,K,D*03
seapath     2008:231:00:00:00.1688  $INHDT,5.82,T*1A
```

Spectrum Instruments TDM-4 Event Logger

The Event logger time stamps time-break triggers from DigiShot in all fire modes.

File id: tagger1

Logging interval: 1 second

Interruptions greater than ten seconds are displayed in the following table.

Log Date	Event	Comment
2009:208:00:00:00.0303		Logging officially
2009:229:20:18:41.1970		Logging officially

Tagger1 data format:

```
tagger1     2008:231:00:00:00.0383  #51,08182008,000001
tagger1     2008:231:00:00:00.2027  #79,00000000
tagger1     2008:231:00:00:00.2948  #68,2
tagger1     2008:231:00:00:00.3689  #70,0
tagger1     2008:231:00:00:00.4010  #56,-00000
tagger1     2008:231:00:00:00.4210  #72,FF
```

SBE-23 Thermosalinograph

The Seabird TSG output is logged by LDS to the “tsg” set. Output is also converted in real-time and recorded to the “tsgconv” data set.

File id: tsg

Logging interval: 1 second

Interruptions greater than ten seconds are displayed in the following table.

2009:208:03:22:51.7214		Logging officially

2009:208:23:59:51.6136		Logging officially

tsg data sample:

```
tsg   2008:231:00:00:01.9179  B479CB5528A6D6ABFB2D
tsg   2008:231:00:00:11.9187  B474CB5428A799ABBB2D
tsg   2008:231:00:00:21.9176  B46FCB5328A70CAB8B2D
```

File id: tsgconv

Logging interval: 1 second

2009:208:03:22:51.7214		Logging officially
2009:208:23:59:51.6136		Logging officially

tsgconv data sample:

```
tsgconv     2008:231:00:00:01.9179  B479CB5528A6D6ABFB2D 1531.59 28.85 24.35 5.53
33.74
tsgconv     2008:231:00:00:11.9187  B474CB5428A799ABBB2D 1531.61 28.85 24.36 5.53
33.74
tsgconv     2008:231:00:00:21.9176  B46FCB5328A70CAB8B2D 1531.60 28.85 24.35 5.53
33.74
```

BGM-3 Gravimeter

File id: vc01
Logging interval: 1 second

Interruptions greater than ten seconds are displayed in the following table.

2009:208:00:00:00.1205		Logging officially
2009:229:20:18:52.1017		Logging officially

Mk21 XBT System

Files: *.RDF,*.EDF

Many XBT drops were made during this cruise. Refer to the Expendable_Drops spreadsheet in the operations directory of the cruise archive.

IV. Seismic Summary

A. Acquisition Parameter Table

Acquisition Parameter Table	
AcquisitionParameterID	N/A
FieldActivityID	MGL0909
ReceiverType	N/A
SourceType	N/A
Acquisition System Name	N/A
Acquisition System Type	N/A
Seismic_Nav_System	C-Nav primary
Survey_datum	WGS84
Navigation Reference Point	N/A
NRP_to_Antennae	N/A
NRP to source	N/A
Antenna_to_Source	N/A
Source_to_Near_Channel	N/A
Number _of_channels_recorded	N/A
Number _of_cables	N/A
Number_of_channels_each_cable	N/A
Channel_length	N/A
Cable_length	N/A
Cable_spacing	N/A
Near_Channel_Number	N/A
Cable_depth	N/A
Number_source_arrays	N/A
Alternate_Shooting	N/A
Source_array_separation	N/A
Source_volume	N/A
Source_pressure	N/A
Source_make,model	N/A
Source_number	N/A
Source_depth	N/A
Shot_control	N/A
Shot_Interval	N/A
Sample_interval	N/A
Record_length	N/A
Compass_birds	N/A
Tail_buoy_Positioning	N/A
Recording_delay	N/A

B. Seismic Overview

No seismic data collection on this cruise.

V. Client Instrumentation

No OBS deployed.

VI. RV Langseth Gravity Tie Information

Not available.

VII. Archive Contents

Key files are bolded.

MGL0909/docs	Cruise documents and logs
MGL0909/docs/elog	Cruise elog
MGL0909/docs/map	Cruise maps, track map
MGL0909/docs/Operations/	Operations documents
MGL0909/docs/Operations/Daily Reports	Cruise Daily Reports from Tech-in-charge
MGL0909/docs/Operations/Issued Clearances	Clearance Documents
MGL0909/docs/Operations/ShipmentDocuments	Shipment logs/invoices
MGL0909/docs/Operations/Waypoints	Waypoint files
MGL0909/docs/Personnel	Personnel rosters, org chart, bunk and phone lists
MGL0909/docs/Report	Cruise Report and supplemental docs
MGL0909/docs/Report/MGL0909_DataReport.doc	**This file**
MGL0909/docs/ScreenCaps	Screen captures
MGL0909/docs/tapelogs	Backup tape index / log files
MGL0909/processed	Processed data
MGL0909/processed/svp	Sound velocity profiles
MGL0909/raw	Raw data
MGL0909/raw/knudsen	Raw Knudsen sub-bottom profiler data
MGL0909/raw/multibeam	Raw EM120 data
MGL0909/raw/serial	Underway data: gps, tsg, weather, etc.
MGL0909/raw/XBT	Raw XBT data